

Development of the Croatian and regional SDI as a part of European SDI

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SUMMARY

By adopting the Law on State Survey and Real Property Cadastre of 2007, the Republic of Croatia has determined to build the National Spatial Data Infrastructure in line with the EU INSPIRE Directive. In this context, the Croatian Spatial Data Infrastructure organizational structure has been established in the past three year and the implementation rules for metadata, identical to the implementation rules adopted by the European Union, have been adopted. As a future member of the European Union, the Republic of Croatia is thus undertaking the steps towards the full implementation of the INSPIRE Directive that must be achieved by the time the Republic of Croatia becomes a member of the European Union. Thus, preconditions are created for the establishment of the protocols and usage of the spatial data without borders and obstacles. This paper describes the activities implemented during the three or four years of implementing the Law as well as the problems to be solved.

In the context of the European Union accession, Croatia faces a specific situation because the spatial information knows no borders towards other countries of the Western Balkans that are neighbouring Croatia but are not member States of the European Union. In this context and incited by the State Geodetic Administration, the “Inspiration – the SDI solution for Western Balkans” Project has been defined and approved by the European Union to be included for financing under the IPA program. The objective of the Project is to promote the Spatial Data Infrastructure concept and prepare the countries in the region for the implementation of the INSPIRE Directive. Seven countries in the region participate in the Project while Croatia plays a double role. On the one hand, it is the recipient of the IPA program assistance and, on the other hand and as a country that pioneered the awareness of the significance and first started the Spatial Data Infrastructure establishment, it is the promoter of building the national Spatial Data Infrastructures in the regional countries along joint European and regional principles. The paper discusses the question of formulating national and regional Spatial Data Infrastructures in the context of the development of the European Spatial Data Infrastructure and defines the principles of its establishment.

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1. PREVIOUS ACTIVITIES ON SDI ESTABLISHMENT IN CROATIA

1.1 Legal Frame

The first legislation concerning the Spatial Data Infrastructure (SDI) in Croatia came into force in February 2007. A separate chapter (Chapter V) defining the SDI was included in the new Law on State Survey and Real Estate Cadastre (Republic of Croatia, 2007). The Law gives a definition of the National SDI and metadata, content of the metadata information, services, National SDI data and subjects that are obliged to participate in its establishment and maintenance. Equally important is that it provides the institutional framework and defines the National SDI bodies and their responsibilities. The SDI part of the Law is harmonized with the Directive establishing the Infrastructure for Spatial Information in the European Community (hereinafter INSPIRE Directive) (European Union, 2007), whereby the main INSPIRE idea is accepted but the content represents only a part of the topics comprised by the INSPIRE Directive.

Unlike the member states, Croatia, as a candidate country for the European Union was not obliged to implement the INSPIRE Directive until 2009, but the Directive is the subject of the accession treaty. The National SDI development in Croatia is therefore conformant to the INSPIRE Directive. In 2009, the INSPIRE Directive was included for the first time in the National Program for the European Union Accession and the transposition of the INSPIRE Directive was monitored.

Since 2007 no further steps have been taken with regard to the transposition of the INSPIRE Directive into national regulations, but in line with the National Program for the European Union Accession the proposal of the new law describing the spatial data infrastructure fully in line with the INSPIRE Directive should be finished in 2011 and adopted till its joining European Union.

1.2 Institutional Framework

The Law defines the SDI institutional framework for the SDI establishment. A three-tier organisation has been foreseen and is already established.

The supreme SDI governing body is the SDI Council appointed by the Croatian Government in 2008. It is the body at the highest, political level. Beside its president, the Council consists of 15 members coming from different ministries responsible for the environmental protection and spatial planning, defence, land registry, transport and communications, agriculture, forestry and water management, science and education, culture, State administration body responsible for e-government, State survey and real property cadastre (SGA), statistics, Croatian Hydro graphic Institute, Croatian Geodetic Institute, geodetic and geoinformatics economic community, IT economic community as well as the Croatian Chamber of Architects and Civil Engineers. The SDI Council is responsible for leading the establishment of the

national SDI and the coordination of the activities of the national SDI subjects.

At the managerial level, there is the SDI Committee appointed by the Council in 2008 and consisting of three representatives from the Council, two from SGA and the heads of working groups. The SDI Committee is a permanent executive body for the SDI establishment.

At the operational level, there are working groups. Members of the working groups are civil servants, regional, local or public officials, scientists and representatives of professional associations and experts from the private sector. So far five working groups have been established:

- Working Group (WG) on Technical Standards
- WG Data Sharing
- WG e-Government
- WG Capacity Building
- WG Business Models.

The SGA, in fact the NSDI Sector in the SGA's Central office, acts as the Secretariat of the SDI Council, coordinates all SDI bodies and provides technical support. In 2010, the SGA has been nominated as the national INSPIRE Point of Contact.

1.3 Activities of Working Groups

The Working Group Technical Standards and the Working Group Data Sharing were established in 2008 and have already achieved some results, while another three working groups were established in July 2009 (Rašić and Bačić, 2010).

The mission of the WG Technical Standards is to coordinate and conduct the development and maintenance of the technical implementation specifications that enable the interoperable operation of geo-services meeting the needs of Croatia's National SDI subjects. The objectives of the WG Technical Standards are to test, verify and elaborate as necessary the technical specification provided by the INSPIRE Directive with regard to the metadata and network services and also give feedback to the INSPIRE drafting teams, to provide proposals for adoption in national regulations. In 2010 WG Technical Standards analysed Implementing rule for Metadata and the task in 2011 is to analyse Implementing rule for Network Services.

The mission of the WG Data Sharing is to coordinate and conduct the development and maintenance of an interoperable and customizable license model which is in line with the Croatian legislation and which allows National SDI Subjects to unambiguously define and publish access conditions for their data and service offers. The WG has already provided a template agreement on the spatial data exchange, usage and access among all National SDI subjects. Subsequently, the WG should provide a harmonized template of rules and conditions for the data and services access and re-use by third parties. All specifications shall be in line with the INSPIRE Implementing Rules and Guidance documents.

The goal of WG e-Government is to harmonise the activities of e-Croatia and National SDI by supporting the determination and fulfilment of mutual needs. It should work on the integration of National SDI into the e-Government processes in order to connect the public sector to the spatial information. In 2001 the WG e-Government is going to analyze the connection between e-Government strategies and National SDI and define common points as well as create a suggestion of institutional connection/communication between e-Government and National SDI strategies holders.

The WG Capacity Building is dealing with the problems resulting from the lack of GI/National SDI professionals needed to expedite the National SDI establishment process as well as the readiness of user communities to utilise National SDI concepts and to adopt those concepts into their workflows. The objectives of the working group are to identify gaps, produce best practice guidelines and work on National SDI-specific curricula for geoinformatics courses at different educational levels. WG produced in 2010 a survey related to spatial data and SDI for high schools and universities.

The WG Business Model should develop business models for establishing sustainable partnerships and business networks and, particularly, for operating common services like catalogues, etc. Due to the complex range of tasks that make up the market-oriented provision of public spatial data, networking with technology partners, content partners and business partners is necessary.

1.4 Results achieved

Legislation

The Working Group Technical Standards has analyzed the Metadata Regulation deriving from the INSPIRE Directive and has prepared a proposal of the metadata specifications based on the INSPIRE metadata regulation to be adopted into the Croatian legislation. The National SDI Committee revised the document and proposed the metadata specifications to the National SDI Council. In August 2010, the Croatian Government adopted the Implementing Rules for Metadata (Government of Republic of Croatia, 2010) as a set of criteria and norms for the data exchange according to the Law.

The Working Group for Data Sharing has produced a draft agreement for the data exchange, sharing and use between the National SDI subjects. The agreement is ready for the public discussion.

Conferences

In order to inform the overall geo-information society about the National SDI concept and introduce the preparations for the work of the Council and other National SDI bodies, the SGA has organized the consultancies and brought in experts from the countries where the National SDI development had been the most successful. The following four workshops were organized in order to share the experiences:

- In collaboration with the Swedish Agency for Development Cooperation (SIDA) and the Swedish Geodetic Authority (Lantmäteriet), the first consultancy on the National SDI establishment was organized on May 29, 2007, for the representatives of the institutions contributing their members to the National SDI Council, and on May 30, 2007, for the representatives of all National SDI subjects (approx. 150 members).
- On September 12, 2007, the SGA organized in cooperation with the Canadian Embassy in Zagreb the presentation of the Canadian model of the National SDI establishment. The consultancy participants represented a cross-section of the geo-information society in Croatia and got the opportunity to see a new concept of the successfully established National SDI.
- In cooperation with the German Association for Technical Assistance (GTZ), a two-day consultancy was organized, presenting the National SDI system of the Federal

Republic of Germany. The consultancy was held on May 26, 2008, for the members of the National SDI Council while on May 27, 2008, it was held for the representatives of all the National SDI entities. The consultancy participants had an opportunity to get familiarized with the spatial data infrastructure of Germany in the context of the European guidelines and the INSPIRE Directive as well as with a concrete example of the development of the spatial data infrastructure in the Lower Saxony.

- As part of the CRONO GIP (CROatian-NORwegian GeoInformation Project) cooperation, the fourth workshop for sharing experiences was held on November 26, 2009, in Varaždin by presenting the Norwegian model of the SDI establishment.

In cooperation with the Croatian Cartographic Society, the State Geodetic Administration organised in the framework of the cartographic conferences:

- The First Croatian NSDI and INSPIRE day, November 26, 2009 in Varaždin,
- The Second Croatian NSDI and INSPIRE day, November 25, 2010 in Opatija.

About 200 experts from various administrative structures (State, regional, local), commercial sector (public, geodetic, geo-information, IT) and education (high and higher education) as well as from abroad - who are interlinked in performing their activities involving the spatial data and, therefore, the National SDI concept - were informed about the latest INSPIRE development as well as Croatian achievements in the National SDI field. These scientific-professional-promotion conferences were held within the frame of the annual cartographic conferences, where the State Geodetic Administration and the Croatian Cartographic Society, as a component of the geodetic profession, appear as holders of National SDI and INSPIRE education activities for all National SDI subject as well as for the wider society, in order to create a geo-enabled society in line with European policies.

Publication

In May 2008, the SGA issued a brochure on the National Spatial Data Infrastructure in the Republic of Croatia that was printed in Croatian with the circulation of 1,000 copies. The production was aided by the European Union under the Real Property Registration and Cadastre Project. The intention was to familiarize the professional audiences directly involved in the National SDI development, be it at the national, regional, local or commercial level, about the National SDI basics as well as to inform the wider audience, i.e. the users. The publication consists of two studies described below:

- Using the European Union grant under the CARDS 2002 Program as part of the Real Property Registration and Cadastre Project, the SGA ordered the production of the Study on the National Spatial Data Infrastructure in Croatia (Remke et al., 2005). This study represents a comprehensive effort whereby the information on the current status of the spatial data in Croatia was collected and analyzed in a systematic and very clear way and in the context of the needs of Croatia and the expectations coming from the European Union. Based on the analysis, concrete steps were proposed regarding the NSDI establishment in Croatia.
- Before this study was materialized, the SGA – using a grant by the Foreign Office of the Great Britain and Commonwealth in cooperation with Geolink Consulting Ltd. – evaluated the study itself as well as the development of the European spatial data infrastructure which resulted in a second study entitled: “Croatia: National Spatial Data Infrastructure and INSPIRE”, (Probert, 2008). This study upheld the conclusions

of the first study and extended it with new information related to the adoption of the INSPIRE Directive.

Given the connection between the two studies leaning on each other, one publication encompassed the afore-mentioned studies in order to provide the readers with a more comprehensive overview of the NSDI establishment as well as of the activities in Europe.

2. NATIONAL AND REGIONAL ASPECTS OF SDI ESTABLISHMENT

Considering the issues of establishing national, i.e. national and regional IPP at the territory of the South-Eastern Europe one should be first of all aware of the fact that the framework of their establishment is determined by the INSPIRE Directive of the European Union representing the framework of IPP establishment not only for the member states of the European Union, but for the other states of Europe as well. This framework is not obligatory for the moment for the states that are not the members of the European Union, but considering their tendency to become the member states, it actually presents the framework within which these states develop their national IPP. The above stated results from the political attitudes of the states in the South-Eastern Europe, the level of their development and the economic power, as well as from their historical heritage. Hence, in the process of building their national IPP the states of the region are also raising the question of how to implement completely the INSPIRE Directive in the future, i.e. how to meet the criteria and standards set up.

In that context, speaking about the INSPIRE Directive it should be taken in consideration that it “came into force on 15 May 2007 and will be implemented in various stages, with full implementation required to be completed by 2019. It aims to create a European Union (EU) spatial data infrastructure. This will enable the sharing of environmental spatial information among public sector organizations and facilitate better public access to spatial information across Europe. A European Spatial Data Infrastructure will assist in policy-making across boundaries. Therefore the spatial information considered under the directive is extensive and includes a great variety of topical and technical themes.”

2.1 National challenges

Although there are great differences in the level of economic development of South-Eastern Europe, the politically defined area of the West Balkans is the most underdeveloped part of Europe, if we neglect the states of the former Soviet Union. Apart from that, the majority of the states were included into the war events in the period between 1991–1996 that additionally weakened their economic power and slowed down the economic and social reforms, as well as the development of modern state administrations that would be able to carry out the reforms and encourage the advancement processes. In such a situation of undeveloped state structures, urban modernisation has been imposed upon the states in the region as an imperative stimulated not only by the fast economic take-off in the first decade of the 21. Century, but also by the intention of the European Union to stabilize the region and include it into the European trends. Along with the whole series of political and economic instruments the above stated has implied first of all the establishment of the legally functioning state based on legal safety, which means in the context of land administration and

IPP first of all the safety in legal transactions with the real estates. The need to achieve legal safety on the one hand and the creation of the prerequisites for the investments into the economy of the state in the region has resulted in the initiation of land administration reform in all countries of the region. On the other hand, the establishment of modern legally functioning state and the harmonization with the European Union has directly influenced a large number of provisions and consequently the creation of the reporting systems, which resulted in the great effort of the states to organize their records, registers and data bases.

Speaking of Croatia, we must bear in mind that in the last ten years the process of establishing modern state structures, of privatisation, of accelerated economic development and of establishing the legal system based on the new principles have been simultaneously developing. All that has been going on in the situation in which the available human resources have been directed towards the economy due to large demands stipulated by economic growth, i. e. due to the lack of human capacities in the state service and to the large pressure made on this service to deal with the needs of economy and the citizens. In this situation it was not possible to meet all the demands, so the defining of legal priorities and their successful realization was a great challenge and skill.

In such a situation the land administration and the development of the national IPP in Croatia were faced with the need to have a thorough system reform carried out, to accelerate the procedures and solve the remaining problems, to remove the bottlenecks and to implement modern solutions at the same time, i.e. to develop IPP. In a certain way the institutions like SGA have been faced with the demand to skip not one, but three steps at the same time, if they wanted to be included into the trends in Europe and the world and cope with the needs of the economy and citizens, and they should also make a breakthrough in terms of legislation, institutions, organization, human resources and infrastructure. After the end of the Homeland War in 1996 SGA passed the Act on State Survey and Real Estate Cadastre two times, and also almost a complete set of subordinate regulations in order to adjust its activities to the real situation and needs, and the organisation scheme has been changed four times after SGA and cadastral offices had been joined into one organisation.

However, the greatest challenge was and still is the lack of human resources, especially the experts that can offer the answers and solutions needed by SGA in the implementation of reforms and its responsibilities. The willingness of donor countries, in the concrete case of Croatia these are the Netherlands, Germany, Norway, Sweden, Great Britain, Canada and the European Union, to help in the reform and development processes has made it possible that the available energy is not wasted, but to build the system with the help of foreign experts that will be able to respond to the challenges. In the realization of bilateral and multilateral cooperation SGA has focused on the development of its own capacities in such a cooperation, because it is limited in terms of finances and time. Today SGA is the user of bilateral help provided only by the Netherlands, and the cycles with other states have been completed.

2.2 Regional challenges

The situation in Croatia can be recognized to larger or smaller extent in other states of the region having their specific political or economic circumstances that individual countries have been faced with in the last two decades. All countries of the region have thus passed the same procedures, the initial changes of the systems, its reforms and development with bilateral help

and the assistance of the World Bank, and in this context the development of modern Internet or GNSS service, as it is described in (Bačić and Obradović, 2010). It is interesting that in all states of the region mentioned in this work the National Mapping and Cadastre Authorities (NMCA's) have become the bearers of implementing the national IPP, speaking both of the defined status through legal solutions (Croatia, Macedonia, Serbia) or through the activities carried out in individual countries (Bosnia and Herzegovina and Monte Negro).

In accordance with the combination of factors influencing the dynamics of development of an individual land administration system and IPP in individual country, the activities of IPP implementation have been postponed, but they are similar to a great extent. The reason should be looked for in the fact that the implementation of national IPP requires also a definite level of data sets included in IPP, the development of services representing a part of IPP structure, the organisation capacities and the notion of IPP at the level of all IPP stakeholders. The implementation of INSPIRE Directive presumes, that a certain level in member countries has been achieved and has therefore set clear time determinants of implementation. It is far from being so in the countries of South-Eastern Europe including great differences between them. As the first steps in the development of the national IPP the countries of the region have therefore looked over the fence and tried to see what the neighbouring countries are doing. The course of solution application can thus be seen from the first solution in Croatia in 2007, then in Macedonia and Serbia, ending with the countries that have prepared or are now preparing the introduction of IPP into the national legislative. It is in some way logical, because the step of „seven miles” cannot be done at once, regardless of the help provided by the experts from abroad, and the gradual approach has proved to be the only possibility with the implementation of current modern solutions in the parts of the system where it is possible. The help provided by foreign experts has manifested itself as irreplaceable, but it has also been shown that they cannot solve all problems within the organisations of land administration reforms and the implementation of the national IPP in all countries. Regardless of the effort invested, the language barriers, cultural differences, the problem perception and mutual dependency in the countries of the region have always been somewhat different between the receivers and providers of the professional help.

In the context of the above stated, even without any intention planned in advance, but having in mind that the bearers of the IPP implementation are NMCA, the situation has directed the development of the national IPP in the South-Eastern Europe and its path to the European IPP, i.e. to their being included into the processes of INSPIRE Directive through regional approach, i.e. to a great extent regionally adjusted approach.

2.3 Global challenges

General globalization has imposed upon all NMCA's of the world numerous challenges and uncertainties referring to the directions and priorities of the developments opening the question of the role of official data related to the private services approachable for public, to the relationship between the updated information on the one hand and the accuracy and reliability on the other hand, to the character of data and information, and to their transformation into products demanded more and more at the national and global markets. The other aspect of global changes and challenges are climate changes and various natural catastrophes or those caused by human activity occurring often in the last twenty years and

imposing upon NMCA's completely new demands to be met, as well as to provide necessary data and services for other users and citizens. In such environment, the development of IPP, both on global level, i.e. Global SDI, continental level, e.g. European SDI, or national level is constantly confronted with other priorities, because the activities connected with climate changes and catastrophes can be characterized as short-term, the issues connected with general globalisation as medium-term, and the development of IPP at any level still presents in its final consideration a long-term goal.

Especially emphasized problem here is the lack of specialized professional staff that would be able to perform the necessary reforms, because the implementation of all stated priorities demands significant changes in the approach to the problems and the work of NMCA's. The staff issue is actually the issue referring to the priorities of individual NMCA, and the level of their insurance for the development of IPP will be the reflection of strategic attitude of the individual NMCA to the realisation of long-term goals.

2.4 Regional SDI intermediate station towards European SDI?

In the given circumstances the basic question is how to enable the accelerated development of national IPP in the region and how to connect to the state in the European Union. The experience shown in the region so far in the implementation of IPP proves that there are significant compatibilities and similarities in the steps and applied solutions, either legal, organisational or technical, which emphasizes the possibility of synergy. Namely, the invested capacities have been undoubtedly repeated in individual tasks. This is in some case completely justified, as in the case of preparation of initial studies, strategies, the first legal and organisational solutions, and present the way to be taken. However, further procedures of IPP implementation demanding the application of certain solutions that are relatively clearly defined by INSPIRE framework, open significant possibilities to concentrate the capacities and rationalize necessary investment in the system development through the cooperation of sister NMCA's of neighbouring countries.

The above stated strongly suggests the development of regional IPP although it cannot be the replacement of the final goal defined for all states of the region by their complete including into the European IPP, i.e. by the fulfilling the conditions from the INSPIRE Directive. However, the possibility of accelerated including into the European IPP is opened through the cooperation on the development of national IPP, and thus on the development of the elements of regional IPP.

3. PROJECT "INSPIRATION –SDI IN THE WESTERN BALKANS"

3.1. Project incentive

In the last years, preparing for the introduction of the National IPP, and later through the implementation of the provisions of the Act on State Survey and Real Estate Cadastre referring to the establishment of the National IPP, the State Geodetic Administration has gathered new experiences in the field that was not within the scope of its activities earlier. It implied additional efforts for SGA to start working on the activities connected with the National IPP along with numerous activities connected with the land administration reform

that had been carried out in the Republic of Croatia until the first Act on State Survey and Real Estate Cadastre was passed (Republic of Croatia, 1999). The experience has been gathered with the help of international experts and by means of financial means provided by donor countries, the European Union and the World Bank credits. The other countries in the region have started with similar activities almost at the same time, or a few years later, recognizing SDI as an important conceptual and operational matter. As the result of these efforts, the basic National SDI legislation has been adopted in Croatia, but also in Macedonia (Republic of Macedonia, 2008) and in Serbia (Republic of Serbia, 2009) while in Bosnia and Herzegovina this legislation is in preparation. The implementation of that legislation in each of these countries is the responsibility of the National Mapping and Cadastre Authorities (NMCA's).

Recognizing the fact that all geodetic administration in neighbouring countries are carrying out the land administration reform, and are initiating the activities of introducing the National IPP in the similar way, SGA has suggested the initiation of the regional development project SDI. The project was directed to the solution of the problems recognized in all countries: lack of awareness related to the National SDI, lack of capacities and technical knowledge, lack of various national databases and relatively low data exchange culture. The project has been supported by six countries along with Croatia that are located in the area of South-Eastern Europe, i.e. as described in the project in the area of the Western Balkans: Albania, Bosnia and Herzegovina, Kosovo, Macedonia, Montenegro, Serbia.

3.2 Project genesis

The project proposal was preceded by the first Regional Conference on Cadastre held in June 8-10 2008 in Opatija, Croatia where all NMCA's of region countries agreed referring to the mutual endeavour to provide for the citizens, economic subjects and institutions opportune, updated, accurate, reliable spatial information in efficient and rational way, having in mind ever growing significance of cadastre and spatial data infrastructure for the development of modern societies based on georeference data. At the same Conference there was also the first mutual project initiated: the preparation of the Regional study on cadastre intended to collect the information about legal, institutional and organisation framework of the land administration, reform programs and the situation in land cadastre of the countries included into the work of the Regional Conference on Cadastre (Slovenia, Croatia, Bosnia and Herzegovina, Monte Negro, Serbia, Kosovo, Macedonia), and their processing and interpretation according to the unique criteria (Roić et. al, 2008).

At the next two regional conferences (June 2009 in Ohrid, Macedonia and June 201 in Bečići, Monte Negro) the programme of cooperation included the exchange of experiences and the creation of the bases for the establishment of national and regional SDI recognizing the importance of the concept of spatial data infrastructure on national as well as on regional level. Having such vision of cooperation in mind, all countries of the region have confirmed their mutual willingness to realize a mutual project with the aim to develop national and regional spatial data infrastructure in accordance with the standards of INSPIRE Directive.

In April 2009, SGA delivered to the European Commission the proposal of the project that would be financed by the means of the European Union within the frame of the Instrument for Pre-Accession Assistance - IPA Multi-Beneficiary Programme. IPA Multi-beneficiary support

is focused on good practice exchange and networking. The project was accepted and after a few iterations renamed into “INSPIRATION - SDI in the Western Balkans” because the European Union defined the group of countries included into the project proposal that have not yet become the member countries of the European Union with the political term «The Western Balkans».

The European Commission has published the Contract forecast publication on 21. January 2011. It is expected that the Contract will be signed at the beginning of July 2011 with the implementation dead line of 30 months. The foreseen maximal project contribution is 1,5 mil EUR. The participation is open to all legal persons (individual or consortium) which are established in a Member state of the EU or in a country or territory covered and/or authorized by the specific instruments applicable to the IPA program. The participation is also open to international organizations.

3.3. Goal and contents of the project

The overall objective of the project is to contribute to a favourable environment for accurate, up-to-date, high-quality, well structured and accessible spatial data in local, regional and State administrative bodies in the Western Balkans.

The purpose of the project is to promote SDI and further coordinate its implementation in the Western Balkans with a view to preparing Beneficiaries to meet the objectives of the Inspire Directive. The project aims to: increase comprehensive and comparable information within and between beneficiaries on the status of land administration and spatial data infrastructure to guide reform priorities, policy development and legislation improvements, increase efficient institutional frameworks and technical arrangements, review legislation regarding SDI framework for implementation in each beneficiary, clarify information on the state of play and needs in terms of capacity and skills and analysis for future improvement of training and education offered, enhance awareness of National SDI/INSPIRE among the general public and government. The activities of the project will include studies and reports, capacity-building and training, conferences and stakeholder forums and awareness-raising campaigns. The main beneficiaries of the project will be the NMCA’s as principal coordinators and focal points. SGA of Croatia will continue to ensure the coordination and supervision as a leading partner at the regional level. Secondary beneficiaries will include universities providing education in surveying, geodesy and geomatics as well as ministries of environment. Tertiary beneficiaries will include National SDI stakeholders, e.g. other governmental institutions, especially ministries of agriculture (regarding land parcel identification system - LPIS) statistical offices, local authorities, geological and hydrographical surveys, private surveying, GIS and geomatic commercial sector, research organizations.

4. CONCLUSION

Specific circumstances that the sister NMCA’s countries of the South-eastern Europe have found themselves in with regard to the development of national IPP and their including into the European IPP have resulted in the initiative to realize a regional project of the IPP development in the region of South-eastern Europe. The mentioned initiative has been recognized by the European Union and supported by the means from IPA Programme. Thus,

the possibilities have been provided not only for the accelerated development of the national IPP in each country, but also for the development of regional IPP as the way to develop the cooperation and accelerated approach to the European IPP and to the adoption of the criteria of INSPIRE Directive.

The essence of the project "INSPIRATION – SDI for the Western Balkans" is contained in the cooperation of the included institutions and countries and in providing multiple benefit from the mutual work on the development of IPP. The concentration of the existing capacities and the involvement of the capacities of project contractors will provide together with other activities such as Regional Conference on Cadastre and its bodies and working groups the accelerated development of national IPPs, the development of necessary capacities, the notion of the need to cooperate on smaller known sample, as the prelude for the process of including into the European Union and the development of services and tools that will be available not only to the organisation that has developed certain service or tool, but to the other participants in the project.

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12/1987 - 07/1997 University of Zagreb, Faculty of Geodesy – teaching assistant
07/1997 – University of Zagreb, Faculty of Geodesy – professor
08/1999 - 07/2000 State Geodetic Administration of Republic of Croatia, Deputy Director General
07/2000 - State Geodetic Administration of Republic of Croatia, Director General

Memberships:

Since 1987 Croatian Geodetic Association, member
Since 2005 Geodetic Association of Herceg-Bosna, honorary member
Since 2009 Croatian Cartographica Association, honorary member
2002-2009 Eurogeographics Management Board, member and president 2004-2007
Since 2005 Cambridge Conference Advisory Board, member

Conferences & statement (in past 2 y):

Vienna, Austria ICA Symposium on Cartography for Central and Eastern Europe, 16.-17.2.2009 (coauthor, theme: New Topographic Map of Croatia: A Tool for Education and Networking)
Washington, USA FIG & WB Conference on Land Governance in support of the MDGS: Responding to new challenges, 9.-10.03.2009. - participant
Eilat, Israel FIG Working week 2009, 3.-8.05.2009. – (co author, theme: Croatian SDI: a Tool for Accelerated Development of the Geo-Conscious Society)
Ohrid, Macedonia 2nd Regional Conference on Cadastre and Land Administration, 25.-27.5.2009. - participant & panelist
Zagreb, Croatia 1st CROPOS Conference, 8.-9.6.2009. (author, theme: Efficient usage of technology and knowledge development – precondition for modern geodesy)
Rotterdam, Netherlands TheGSDI 11, 15.-19.06.2009. – (author, theme: Process of Transition and SDI: Interaction effects and the role of the NMCA)
Southampton, UK Cambridge Conference – The exchange 2009, 12.-15.07.2009. (author, theme: Challenges of economic turbulences and how mapping can help to solve it - Transitional world)

Varaždin, Croatia	1 st Croatian NIPP & Inspire Day and 5 th Conference “Cartography and Geoinformation” 16.-17. 11. 2009. - participant
Zagreb, Croatia	4 th Croatian Congress on Cadastre, 15.-17. 02. February 2010 (author, theme: Present status of State Geodetic Administration)
Sydney, Australia	FIG Congress 2010, Facing the Challenges Building the Capacity 11-16.4.2010 (coauthor, themes: South-East regional SDI cooperation – SEE Inspiration; The Role of National Mapping and Cadastre Agencies in Establishment of NSDI: Croatian Example: The implementation of new official geodetic datum and map projections in the Republic of Croatia; Official Spatial Data as the Basis for Management in Agriculture)
Bečići, Montenegro	3 rd Regional Conference on Cadastre 9 – 11. 6. 2010 – (author, theme: Regional projects in Land Administration)
Krakow, Poland	4 th Inspire Conference 7. 2010 – (coauthor, theme: Regional Cooperation on SDI Inspiration - SDI in Western Balkans)
Opatija, Croatia	International GISData User Conference, 23 -24. 9. 2010. – (author, theme: Spatially enabled Government – where are and what are limitations in SDI implementation)
Opatija, Croatia	3 rd Symposia of Croatian Licensed Surveyors, 23. -24. 10. 2010. – (author, theme: Spatial information – surveying profession – economic recovery – what to do and what are the perspectives)
Interests:	SDI, cartography, satellite positioning, physical planning, capacity building in surveying...

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Nationality	Croat
Date of birth	08th August 1969
Education:	
1987-1993	Dipl. Ing. University of Zagreb, Faculty of Geodesy
1997-2002	Mr.Sci. University of Zagreb, Faculty of Geodesy
Employers:	
09/1993-12/1996	Federal Agency for Cartography and Geodesy, Frankfurt/M, Germany
01/1997-	State Geodetic Administration of Republic of Croatia
	- Head of Photogrammetry and Remote Sensing Department (2002-2011)
	- Assistant Director for NSDI (2011-)
Memberships:	
Since 2001	Croatian Permanent Correspondent in EuroGeographics
Since 2004	Substitute of Executive Boards of Scientific Council for Remote Sensing and Photointerpretation in Croatian Academy of Science and Artistry
Since 2007	Croatian Chamber of Licensed Surveyors, member
Since 2008	Member of Croatian NSDI Committee
Conferences & statement (in past 2 y):	
Eilat, Israel	FIG Working week 2009, 3.-8.05.2009. – (co author, theme: Croatian SDI: a Tool for Accelerated Development of the Geo-Conscious Society)

Rotterdam, Netherlands The GSDI 11, 15.-19.06.2009. – participant

Varaždin, Croatia 1st Croatian NIPP & Inspire Day and 5th Conference “Cartography and Geoinformation 26.-27. 11. 2009. - participant

Sydney, Australia FIG Congress 2010, Facing the Challenges Building the Capacity 11-16.4.2010. (coauthor, themes: The Role of National Mapping and Cadastre Agencies in Establishment of NSDI: Croatian Example)

Krakow, Poland 4th Inspire Conference 23.-25.6. 2010 – participant

Opatija, Croatia 3rd Symposia of Croatian Licensed Surveyors, 23. -24. 10. 2010. – (author, theme: Official digital orthophoto maps and their use)

Opatija, Croatia 2nd Croatian NIPP & Inspire Day and 6th Conference “Cartography and Geoinformation 25.-26. 11. 2010. - participant

Interests: SDI, cartography, satellite positioning, physical planning, capacity building in surveying, ...

Name, Surname **Sanja, Zekušić**

Nationality Croat

Date of birth 8th January 1969

Status Single

Education:
1993 Dipl. Ing. University of Zagreb, Faculty of geodesy

Employers:

April 2008 - present State Geodetic Administration, Head of Project Implementation Unit of the EU projects

Jan. 2003. – Apr. 2008 State Geodetic Administration and Ministry of Justice, Real Property Registration and Cadastre Project, Procurement Specialist

June 2001 – Jan. 2002. DFID, Preparatory project for the Real Property Registration and Cadastre Project for the Republic of Croatia, Deputy manager

1995 - 2001 State Geodetic Administration of Republic of Croatia, associate and adviser in Department for IT support

1994 – 1995 Ministry of construction and environmental protection, Department for geodetic and cadastral works, trainee

Memberships:

Conferences & statement (in past 2 y):

Zagreb, Croatia 1st CROPOS Conference, 8.-9.6.2009.

Varaždin, Croatia 1st Croatian NIPP & Inspire Day and 5th Conference “Cartography and Geoinformation 16.-17. 11. 2009. - participant

Zagreb, Croatia 4th Croatian Congress on Cadastre, 15.-17. 02. February 2010

Sydney, Australia FIG Congress 2010, Facing the Challenges Building the Capacity 11-16.4.2010
(coauthor, themes: Official Spatial Data as the Basis for Management in Agriculture)

Bečići, Montenegro 3rd Regional Conference on Cadastre 9 – 11. 6. 2010

Interests: SDI, cadastre, capacity building in surveying, EU projects ...

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